THOMAS WALTER'S SPECIES OF *MELANTHIUM* (LILIACEAE)

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ABSTRACT

Thomas Walter, in his *Flora Caroliniana* (1788), included seven names within the genus *Melanthium* (Liliaceae). His names are here associated with the modern species they represent, within the genera *Amianthium*, *Chamaelirium*, *Helonias*, *Melanthium*, *Tofieldia*, and *Zigadenus*. *Melanthium hybridum* is restored as the prior name for the plant recently known as *Melanthium latifolium* or *Veratrum latifolium*.

Key Words: Thomas Walter, *Flora Caroliniana*, Liliaceae, Melanthiaceae, *Melanthium*

RESUMEN

Thomas Walter, en *Flora Caroliniana* (1788), incluyó siete nombres dentro del género *Melanthium* (Liliaceae). Sus nombres aquí están asociados con las especies modernas que representan, dentro de los géneros *Amianthium*, *Chamaelirium*, *Helonias*, *Melanthium*, *Tofieldia*, y *Zigadenus*. *Melanthium hybridum* es restituido como nombre prioritario de la planta recientemente conocida como *Melanthium latifolium* o *Veratrum latifolium*.

In the 1780s, Thomas Walter owned and operated a rice plantation on the Santee River, now in Berkeley County, South Carolina. With a classic education and a keen and inquisitive mind, and guided by his few books by Carl Linnaeus, Walter observed the plants he found around him and prepared an inventory. His *Flora Caroliniana*, published in 1788, was the first American flora to follow Linnaeus's sexual system of classification and binomial nomenclature.

Walter kept no herbarium (Ward 2007b), and his brief descriptions, in Latin, have been in many cases difficult or impossible for later workers to associate with the plant species he intended. Because of the early date of his book, many of Walter's names are prior to names given the same plants by Michaux, Pursh, Nuttall, and other early authors. In many cases Walter's names are recognized as prior and are in modern use. Others lurk in obscurity, potentially of nomenclatural importance, but overlooked or neglected because of the uncertainty of their identification. Though no complete analysis of Walter's 400+ new names has yet been published, authors have from time to time dipped into Walter's *Flora* with the objective of matching his names with known species. Notably, Hitchcock (1905) has addressed the grasses, Blake (1915) various species, Dayton (1952) the pines, and Wilbur (2002) the oaks.

The present task is to examine and identify the seven names that Walter used for species within the genus *Melanthium*. These species are now seen as representing six distinct genera: *Amianthium* Gray, *Chamaelirium* Willdenow, *Helonias* Linnaeus, *Melanthium* Linnaeus, *Tofieldia* Hudson, and *Zigadenus* Michaux. Historically, these six genera have been included within the Liliaceae. Five of these genera, with others, are often now recognized to represent a distinct family, the Melanthiaceae. *Tofieldia* has been segregated into a separate family, the Tofieldiaceae. As such, most of the included species have been given careful study, with their morphology and relationships now well understood (Zomlefer 1997a, 1997b; Zomlefer et al. 2001, 2006).

One name formed by Walter, however, has at times been misinterpreted or improperly dismissed. As early as Elliott (1817), Walter's *Melanthium hybridum* was understood to be the "broad-petaled" *Melanthium* (or *Veratrum*) of the Southern Appalachians. Fernald and Schubert (1948: 193) confirmed application of the name. Zimmerman (1958: 281) also accepted the name (as a *Veratrum*), though simply as "ex char." The name was used by H.E. Ahles in the regional Carolina flora (Radford et al. 1968). However Bodkin (1979) stated *M. hybridum* to be "misapplied" and "not in accordance with the rules of nomenclature." Zomlefer (1997a: 160–165) followed Bodkin's lead in rejecting Walter's name (though placing the name within *Veratrum*).

Bodkin and Utech (2003: 78), under *M. latifolium* Desrousseaux (1797), again dismissed Walter's name as "misapplied" without stating where the name should be correctly assigned.

But if one believes that *Melanthium hybridum* was not a figment of Walter's imagination, his name cannot be ignored. With the assumption that Fernald and Schubert (1948) and Zimmerman (1958) could not have been far afield in their identification, Walter's plant must have been one of the few species of Melanthiaceae to occur in the Southern Appalachians and adjacent coastal plain. His description excluded other related genera, and the orbicular, crinkled tepals of *M. hybridum* (imperfectly described by Walter as "*plicato-undulatis*") contrast sharply with the elliptic, plane tepals of *M. virginicum* (which Walter knew as *M. monoicum*). As to Walter's name not being in accord with "the rules of nomenclature," the statement is made without substantiation. Walter's *M. hybridum* (1788) is prior to Desrousseaux's *M. latifolium* (1797). There appears to be no impediment to recognition of *Melanthium hybridum* Walter as the correct name for the broad-petaled *Melanthium* of the Southern Appalachians.

Walter's Santee River home was on the South Carolina coastal plain. His plants, as noted in the introduction to his *Flora*, came from within a 50-mile radius. The Scottish horticulturist, John Fraser, with his travels to the higher Appalachians and into central Georgia (Ward 2006, 2007b), had access to a wider array of species. It has long been acknowledged that some of Walter's plants reached him via Fraser (though perhaps fewer than sometimes stated). The Fraser fir (*Abies fraseri*), Fraser magnolia (*Magnolia fraseri*), and showy lady-slipper (*Cypripedium reginae*), all montane or upper piedmont species, are outstanding examples.

The identifications given here are subject to an unavoidable level of uncertainty. The basis for each identification is initially Walter's Latin diagnosis, which too often is brief and ambiguous. Additional guidance can at times be obtained from early authors with knowledge of the Carolina flora. Three decades after Walter's death, Elliott, with his *Sketch of the Botany of South Carolina and Georgia* (1816–1824), often was perceptive of his predecessor's intentions. Britton clearly tried to account for all the Walter names that occurred within the range of his *Illustrated Flora* (Britton and Brown 1896–1898). *Index Kewensis*, compiled by Jackson (1893–1895), listed essentially every Walter name, though too frequently reflecting Jackson's unfamiliarity with American plants.

Perhaps the most powerful aid to correct identifications of Walter's names is modern knowledge of present plant distribution within the Carolinas. The maps prepared by Radford and colleagues (Radford et al. 1968) permit tabulation of species likely to have been known to Walter on the Carolina coastal plain. Even so, many species may have become much less frequent in subsequent years, possibly through climate change and certainly through habitat modification. Thus species that would seem attainable only by way of Fraser may possibly have once grown in Berkeley County or environs.

Notations in Walter's book at times carry unpublished information. His *Flora*—as an original publication—is rare. A more widely available facsimile edition was published in 1946. This facsimile preserved the sequence of the original copy's owners, as ascribed on the title page, from James Macbride in 1812 to Charles Sprague Sargent around 1900. One of the owners (the handwriting has not been identified) added marginal notes to certain pages, such as pages 125 and 126 regarding *Melanthium*. These notations, at minimum, record the thoughts and speculations of an attentive early botanist.

Of Walter's seven species of *Melanthium*, only three (Radford et al. 1968) occur with any frequency on the Carolina coastal plain—his *M. virginicum* (= *Zigadenus glaberrimus*), *M. Muscaetoxicum* (= *Amianthium muscaetoxicum*), and *M. racemosum* (= *Tofieldia racemosa*). His other four—*M. hybridum* (= *Veratrum hybridum*), *M. monoicum* (= *Veratrum virginicum*), *M. spicatum* (= *Helonias bullata*), and *M. dioicum* (= *Chamaelirium luteum*)—are rare or absent within his range, and best explained as having come by way of Fraser. Walter's lack of opportunity to know these species in the field may have contributed to his unclear and sometimes conflicting descriptions. (Another species, *Stenanthium densum*, is also frequent on the coastal plain, yet unmentioned by Walter. See discussion under *Amianthium muscaetoxicum*.)

The species are recorded below in the sequence given by Walter (1788). Each entry consists of the scientific name and Latin diagnosis (in *italic*) provided by Walter; the modern name, conforming to the judg-

ment of the present writer; and pertinent comments of the present writer. Walter's division of *Melanthium* into two sections is recorded, with his diagnostic details (in *italic*). Marginal notations of a previous owner of the original volume are also transcribed (in *italic*). Specimens noted to be in the Fraser/Walter herbarium are now held by the Natural History Museum, London (BM); they were collected in 1787 by John Fraser and seen at least in part by Thomas Walter (Ward 2006, 2007b).

LIST OF SPECIES

SECTIONAL CHARACTERS: *Petalis unguiculatis imprimis albis demum obscuro-rubris feminibus* semi ovatis.

WALTER'S NAME: *Melanthium virginicum* (p. 125) Linnaeus, Sp. Pl. 339. 1753; misapplied.
WALTER'S DESCRIPTION: *petalis planis maculis duabus flavis notatis, floribus plerumque hermaphroditis.*
MARGINAL NOTATION: "*hic Zigadenus glaberrimus Michx.*"
MODERN NAME: **Zigadenus glaberrimus** Michx.
COMMENTS: A first assumption was that Walter's *Melanthium virginicum* is simply the *Melanthium virginicum* of Linnaeus (1753). However, Walter's description better fits *Zigadenus glaberrimus*, a frequent species in eastern South Carolina. The perfect flowers and two distinct yellow glands on each tepal ("*maculis duabus flavis*") are diagnostic. Specimen 71-A of the Fraser/Walter herbarium (BM) is probably this; it was labeled "*Melanthium virginicum*" by Walter. True *Melanthium virginicum*, a rare species, was also known to Walter, but under another name (*M. monoicum*, q.v.). Misidentifications by Walter of Linnaean names are not uncommon (Wilbur 2002; Ward 2007b).

WALTER'S NAME: *Melanthium hybridum* Walter (p. 125)
WALTER'S DESCRIPTION: *petalis plicato-undulatis [i]mmaculatis, floribus masculis et foemineis mixtis.*
MODERN NAME: **Melanthium hybridum** Walt. [= *Melanthium latifolium* Desr. in Lam.; *Veratrum latifolium* (Desr. in Lam.) Zomlefer]
COMMENTS: Rare in South Carolina, frequent in western North Carolina; likely a Fraser discovery. No specimen that can be considered Walter's type is known. [Desrousseaux (1797) cited a Fraser collection, possibly seen by Walter, in the Lamarck herbarium, Paris (photo, GH), but made it the type of his *Melanthium latifolium*.] A neotype for *M. hybridum* has been selected elsewhere (Ward 2008b). The justification for restoration of Walter's name is provided above.

WALTER'S NAME: *Melanthium monoicum* Walter (p. 125)
WALTER'S DESCRIPTION: *petalis planis, maculis 2 luteis, floribus inferioribus masculis majoribus, paniculis lateralibus; superioribus foemineis racemo terminali.*
MARGINAL NOTATION: "*Melanthium virginicum Michx. ? /* [*Zygadenus* (deleted)] *Mx*"
MODERN NAME: **Melanthium virginicum** L. [= *Veratrum virginicum* (L.) Ait.]
COMMENTS: Rare in South Carolina (two counties), frequent in North Carolina; likely a Fraser discovery. Walter's unusually lengthy diagnosis is adequate for *Melanthium virginicum*; its flowers are often imperfect. No type is known, and no specimen has been identified in the Fraser/Walter herbarium (BM). Because Walter's name will remain in synonymy, no neotype is needed.

SECTIONAL CHARACTERS: *Petalis sessilibus, feminibus* ovatis.

WALTER'S NAME: *Melanthium Muscaetoxicum* Walter (p. 125)
WALTER'S DESCRIPTION: *scapo thyrsifero, floribus hermaphroditis, petalis imprimis albis demum viridibus.*
MARGINAL NOTATION: "*Helonias* [word deleted] / *erythrosperma Michx.*"
MODERN NAME: **Amianthium muscaetoxicum** (Walt.) Gray [= *Zigadenus muscaetoxicum* (Walt.) Regel]
COMMENTS: Frequent throughout. Walter's name has been uniformly considered to apply to the plant presently carrying his epithet. The change in tepal coloration with age, from white to greenish, is quite characteristic. No type specimen is known. A neotype has been selected elsewhere (Ward 2008a), thereby confirming Walter's epithet in this usage. However, a marginal note (immediately following, by a previous owner of

the volume from which the 1946 facsimile was copied) well indicates the uncertainty that Walter's descriptions left behind. Another species, frequent on the coastal plain and surely known to Walter, appears not mentioned by him. This is *Stenanthium densum* (Desr.) Zomlefer & Judd [= *Zigadenus densus* (Desr.) Fern.; *Amianthium angustifolium* (Michx.) Gray; *Tracyanthus angustifolius* (Michx.) Small], a plant quite similar to *A. muscaetoxicum* but separated (often to generic rank) by its small single tepal glands (vs. tepal glands absent in *A. muscaetoxicum*). As the previous owner suggested (below), Walter may have confounded the two species.

Marginal notation (at page bottom, below all text): *"Which of these is the Helonias angustifolia Michx. / It is confounded with M. muscaetoxicum or omitted."*

WALTER'S NAME: *Melanthium spicatum* Walter (p. 125)
WALTER'S DESCRIPTION: *spica nutante, flor. hermaph. radice fibrosa, fol. caulinis subovatis.*
MODERN NAME: Probably **Helonias bullata** L.
COMMENTS: If correctly identified, this species is very rare in western North Carolina, South Carolina, and northern Georgia; it is likely a Fraser discovery. Specimen 58-C (BM) appears to be *Helonias bullata*; it shows a distinctive short-spicate inflorescence, although the leaves are atypically narrow. The specimen was numbered "579" by Fraser, and labeled "*Helonias bullata ?*" by Walter. Since Walter must have relied on Fraser material for his description, it is unclear why he would have used Linnaeus's name on the label and formed a new name in his text. Thus there must be doubt as to identity of Walter's plant. *Melanthium spicatum* was suggested by Index Kewensis (Jackson 1893–1895) to be *Xerophyllum setifolium* Michx. [now *X. asphodeloides* (L.) Nutt.]. But Walter stated cauline leaves to be "*subovatis*," while *X. asphodeloides* leaves are linear, almost acicular. If specimen 58-C should be confirmed as *Helonias bullata*, the probability that Walter relied on this or other material of the same Fraser collection would justify designation of 58-C as lectotype of *Melanthium spicatum* Walt. [Rationale for such typification is given by Ward (2007a).] However, the status of that epithet as a synonym of Linnaeus's prior name makes this designation unnecessary.

WALTER'S NAME: *Melanthium dioicum* Walter (p. 126)
WALTER'S DESCRIPTION: *petalis sublinearibus.*
MARGINAL NOTATION: "*Veratrum luteum Linn. / Helonias pumila, Jacquin.*"
MODERN NAME: **Chamaelirium luteum** (L.) Gray [= *Veratrum luteum* L.]
COMMENTS: Rare on South Carolina coastal plain, common inland. Walter's diagnosis is exceedingly brief (two words), but the narrowly oblanceolate tepals of *Chamaelirium luteum* correspond well, and usage by other authors has been consistent. No type specimen is known. Linnaeus's prior epithet makes designation of a neotype unnecessary.

WALTER'S NAME: *Melanthium racemosum ?* Walter (p. 126)
WALTER'S DESCRIPTION: *racemo termiali, pedunculis trifloris, floribus calyculatis, petalis albis obovatis, antheris ovatis, luteis, erectis.*
MARGINAL NOTATION: "*Narthecium pubens / Michx.*"
MODERN NAME: **Tofieldia racemosa** (Walt.) BSP.
COMMENTS: Frequent in eastern South Carolina. The inflorescence with mostly 3-flowered nodes ("*pedunculis trifloris*") is distinctive of *Tofieldia racemosa*, as are the obovate white tepals. There seems no reason for Walter's indication of doubt; the name *Melanthium racemosum* was original with him. Michaux (1803) used *Melanthium racemosum* differently, perhaps for *Veratrum virginicum* L. as suggested by Index Kewensis (Jackson 1893–1895). Other authors have been consistent in recognizing the transfer of Walter's epithet to *Tofieldia*; none has suggested invalidity on the basis that the query indicates Walter's failure to accept his new name (McNeill et al. 2006, Art. 34.1). No type specimen is known. A neotype has been selected elsewhere (Ward 2008b).

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